58843.US

11.   (currently amended) A method for analyzing defects on a ~~semiconductor~~ substrate, the method including the steps of:

optically inspecting the substrate to detect the defects,

identifying the defects by location,

analyzing the defects to detect extended objects, by

enclosing groups of the defects within bounding boxes with different sizes to determine whether a given group of defects defines a given extended object, even though the size of the bonding box surrounding the given group of defects is different than the size of other bounding boxes surrounding other groups of defects that have also been defined as the given extended object,

enclosing groups of the defects within bounding boxes with different orientations to determine whether a given group of defects defines a given extended object, even though the orientation of the bonding box surrounding the given group of defects is different than the orientation of other bounding boxes surrounding other groups of defects that have also been defined as the given extended object, and

enclosing groups of the defects within bounding boxes with a different degree of overlap to determine whether a given group of defects defines a given extended object, even though the degree of overlap of the bonding box surrounding the given group of defects is different than the degree of overlap of other bounding boxes surrounding other groups of defects that have also been defined as the given extended object, and

analyzing a set of the given extended objects for an identifiable pattern of repetition across the substrate.

12.   (original) The method of claim 11, wherein the extended objects include at least one of clusters and signatures.

58843.US

13.   (canceled)
14.   (canceled)
15.   (canceled)
16.   (canceled)

17.   (currently amended) An apparatus for analyzing defects on a substrate, the
       apparatus comprising:
       a sensor for inspecting the substrate and providing defect information,
       a stage for providing relative movement between the sensor and the substrate and
              providing position information,
       an input for receiving at least one of a bounding box size, a bounding box
              orientation, and a bounding box overlap as adjustable parameters, and
       a controller for;
              correlating defect information from the sensor and position information
                     from the stage to define defects,
              analyzing the correlated defect information and position information to
                     detect extended objects, by
                     enclosing groups of the defects within bounding boxes with
                            different sizes to determine whether a given group of
                            defects defines a given extended object, even though the
                            size of the bonding box surrounding the given group of
                            defects is different than the size of other bounding boxes
                            surrounding other groups of defects that have also been
                            defined as the given extended object,
                     enclosing groups of the defects within bounding boxes with
                            different orientations to determine whether a given group of
                            defects defines a given extended object, even though the
                            orientation of the bonding box surrounding the given group
                            of defects is different than the orientation of other bounding
                            boxes surrounding other groups of defects that have also
                            been defined as the given extended object, and

58843.US

30   enclosing groups of the defects within bounding boxes with a

different degree of overlap to determine whether a given

group of defects defines a given extended object, even

though the degree of overlap of the bonding box

surrounding the given group of defects is different than the

degree of overlap of other bounding boxes surrounding

other groups of defects that have also been defined as the

given extended object, and

35   analyzing a set of the given extended objects for an identifiable pattern of

repetition across the substrate.

18.   (canceled)

19.   (original) The apparatus of claim 17 wherein the substrate is at least one of a
semiconductor substrate, a reticle, and a mask.

20.   (original) The apparatus of claim 17 wherein the sensor is an optical sensor.